

## CLAIMS

1. Functionalized prepolymer (macromer) obtainable by reaction of a prepolymer comprising at least one alcohol,  
5 amine, and/or sulfhydryl group, with an unsaturated mono-esterified dicarbonic acid.
2. Functionalized prepolymer (macromer) according to claim 1, wherein the prepolymer is end-capped with the  
10 unsaturated mono-esterified dicarbonic acid
3. Functionalized prepolymer (macromer) according to claim 1 or claim 2, wherein the unsaturated mono-esterified dicarbonic acid is mono-esterified fumaric acid.  
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4. Functionalized prepolymer (macromer) according to any of the claims 1-3, wherein the unsaturated mono-esterified dicarbonic acid is esterified with a C<sub>1</sub>-C<sub>5</sub> alkyl alcohol, preferably an ethyl alcohol.  
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5. Functionalized prepolymer (macromer) according to any of the claims 1-4, wherein the unsaturated mono-esterified dicarbonic acid is fumaric acid monoethyl ester.
- 25 6. Functionalized prepolymer (macromer) according to any of the claims 1-5, wherein the prepolymer is chosen from the group consisting of poly(ethylene glycol) (PEG), poly(trimethylene carbonate) (polyTMC), poly(D,L-lactide) (PDLLA), poly(L-lactide) (PLLA), poly(D-lactide) (PDLA),  
30 poly( $\epsilon$ -caprolactone) (PCL), poly(dioxanone), and combinations thereof.

7. Polymer network obtainable by radical polymerization of a functionalized prepolymer (macromer) according to any of the claims 1-6.

5           8. Polymer network according to claim 7, wherein the radical polymerization is ultra-violet (UV) radical polymerization, redox radical polymerization, and/or heat radical polymerization.

10           9. Method for providing a functionalized prepolymer (macromer), comprising reacting of a prepolymer comprising at least one alcohol, amine, and/or sulfhydryl group with an unsaturated mono-esterified dicarbonic acid

15           10. Method according to claim 9, wherein the alcohol, amine, and/or sulfhydryl group is present at the terminus of the prepolymer.

            11. Method according to claim 9 or claim 10, wherein the  
20 unsaturated mono-esterified dicarbonic acid is mono-esterified fumaric acid.

            12. Method according to any of the claims 9-11, wherein the unsaturated mono-esterified dicarbonic acid is esterified with  
25 a C<sub>1</sub>-C<sub>5</sub> alkyl alcohol, preferably an ethyl alcohol.

            13. Method according to any of the claims 9-12, wherein the unsaturated mono-esterified dicarbonic acid is fumaric acid monoethyl ester.

30           14. Method according to any of the claims 9-13, wherein the prepolymer is chosen from the group consisting of poly(ethylene glycol) (PEG), poly(trimethylene carbonate) (polyTMC), poly(D,L-lactide) (PDLLA), poly(L-lactide) (PLLA),  
35 poly(D-lactide) (PDLA), poly( $\epsilon$ -caprolactone) (PCL), poly(dioxanone) and combinations thereof.

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15. Method for providing a polymer network comprising radical polymerization of a functionalized prepolymer (macromer) as defined in any of the claims 1-6.

5           16. Method according to claim 15, wherein radical polymerization is ultra-violet (UV) radical polymerization, redox radical polymerization, and/or heat radical polymerization.

10           17. Method according to claim 15 or claim 16 comprising:  
              - dissolution of the functionalized  
              prepolymer (macromer) in a suitable solvent  
              or providing a melt of the  
              functionalized prepolymer (macromer);  
              - ultra-violet (UV) radiation, redox,  
15           and/or heat treatment of the  
              functionalized prepolymer (macromer).

              18. Use of a polymer network as defined in claim 7 or  
              claim 8 as a medicament.  
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              19. Use of a functionalized prepolymer (macromer) as  
              defined in any of the claims 1-6 as a medicament.